

I. INTRODUCTION

Claims 9-16 and the Abstract have been amended above to clarify the subject matter provided therein. Paragraph [0048] of the Substitute Specification has been amended above to correct a minor informality. Claims 17-32 have been added. Claims 1-8 were previously cancelled, without prejudice. Applicants reserve the right to pursue the subject matter of cancelled claims in one or more continuing applications. Accordingly, claims 9-32 are under consideration in the present application.

Provided above, please find an amendment to the Abstract, specification and a claim listing indicating the claim cancellations, amendments, additions and current status of the claims on separate sheets so as to comply with the requirements set forth in 37 C.F.R. § 1.121. Applicants respectfully submit that no new matter has been added.

II. OBJECTION TO INFORMATION DISCLOSURE STATEMENT SHOULD BE WITHDRAWN

The Examiner objects to the Information Disclosure Statement (IDS) filed November 24, 2008, alleging that it contains a reference without a date. Applicants respectfully submit that the date of such reference is March 15, 1976. Enclosed herewith is a form SB/08A which provides such information, which should be initialed and returned to Applicants' representatives in the next communication.

Accordingly, Applicants respectfully request that the Examiner consider such reference, and that the objection to the IDS be withdrawn.

**III. OBJECTION TO SPECIFICATION SHOULD BE WITHDRAWN**

The Examiner objects to the specification because the Abstract exceeds 150 words. As the Examiner shall ascertain, the Abstract has been amended to be less than 150 words.

Accordingly, Applicants respectfully request that the objection to the Specification be withdrawn.

**IV. REJECTIONS UNDER 35 U.S.C. § 101 SHOULD BE WITHDRAWN**

Claims 13-16 stand rejected under 35 U.S.C. § 101 as allegedly being directed to non-statutory subject matter. Specifically, the Examiner alleges that claims 13 and 14 recite a "software arrangement", and that software *per se* is not considered statutory subject matter, and that claims 15 and 16 recite "a computer-accessible medium", and that such recitation is not sufficient to be considered statutory subject matter. (See Office Action, p. 3, paragraphs 7 and 8).

However, Applicants respectfully submit that claims 13-16 are indeed directed to statutory subject matter. Specifically, with respect to claims 13 and 14, the software arrangement recited comprises a set of instructions which are executed by a processing arrangement. Further, claims 15 and 16 each recite a computer-accessible medium that includes a computer program thereon that is executed by a processing arrangement. The processing arrangement recited in claims 13-16 provides a particular machine or apparatus. The Federal Circuit has stated that a claimed process is surely patent-eligible under 35 U.S.C. § 101 if: (1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. *In re*

*Bilski*, 545 F.3d 943, 954 (Fed. Cir. 2008). Accordingly, Applicants respectfully submit that claims 13-16 recite statutory subject matter.

In view of the above, Applicants respectfully request withdrawal of the 35 U.S.C. § 101 rejection of claims 13-16.

**V. REJECTIONS UNDER 35 U.S.C. § 103(a) SHOULD BE WITHDRAWN**

Claims 9-16 stand rejected under 35 U.S.C. §103(a) as being allegedly unpatentable over "Ultimate Strength and Failure Mechanism of Resistance Spot Weld Subjected to Tensile, Shear, or Combined Tensile/Shear Loads" Journal of Engineering Materials and Technology, April 2003, Vol. 125 pp. 125-132 by Chao (hereinafter "Chao"), in view of "Large Cold Plastic Deformation of Metal Matrix Composites Reinforced by SiC Particles" Journal of Materials Science Letters 12 (1993), pp. 1519-1521 by Jiang (hereinafter "Jiang").

"To reject claims in an application under Section 103, an examiner must show an unrebutted *prima facie* case of obviousness." *In re Rouffet*, 47 U.S.P.Q.2d 1453, 1455 (Fed. Cir. 1998). The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under Section 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.

Indeed, to sustain a rejection under 35 U.S.C. § 103(a), there must be some teaching, other than the instant application, to alter the prior art to arrive at the claimed invention.

"The problem confronted by the inventor must be considered in determining whether it

would have been obvious to combine the references in order to solve the problem.”  
*Diversitech Corp. v. Century Steps, Inc.*, 850 F.2d 675, 679 (Fed. Cir. 1998).

The objective standard for determining obviousness under 35 U.S.C. § 103, as set forth in *Graham v. John Deere, Co.*, 383 U.S. 1 (1966), requires a factual determination to ascertain: (1) the scope and content of the prior art; (2) the level of ordinary skill in the art; and (3) the differences between the claimed subject matter and the prior art. Based on these factual inquiries, it must then be determined, as a matter of law, whether or not the claimed subject matter as a whole would have been obvious to one of ordinary skill in the art at the time the alleged invention was made. *Graham*, 383 U.S. at 17. Courts have held that there must be some suggestion, motivation or teaching of the desirability of making the combination claimed by the applicant (the “TSM test”). See *In re Beattie*, 974 F.2d 1309, 1311-12 (Fed. Cir. 1992). This suggestion or motivation may be derived from the prior art itself, including references or disclosures that are known to be of special interest or importance in the field, or from the nature of the problem to be solved. *Pro-Mold & Tool Co. v. Great Lakes Plastics, Inc.*, 75 F.3d 1568, 1573 (Fed. Cir. 1996).

Although the Supreme Court criticized the Federal Circuit’s application of the TSM test, see *KSR International Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741, (2007) the Court also indicated that the TSM test is not inconsistent with the *Graham* analysis recited in the *Graham v. John Deere* decision. *Id.*; see *In re Translogic Technology, Inc.*, No. 2006-1192, 2007 U.S. App. LEXIS 23969, \*21 (October 12, 2007). Further, the Court underscored that “it can be important to identify a reason that would have prompted a person of ordinary skill in the relevant field to combine the elements in the

way the claimed new invention does." *KSR*, 127 S. Ct. at 1741. Under the precedent established in *KSR*, however, the presence or absence of a teaching, suggestion, or motivation to make the claimed invention is merely one factor that may be weighed during the obviousness determination. *Id.* Accordingly, the TSM test should be applied from the perspective of a person of ordinary skill in the art and not the patentee, but that person is creative and not an automaton, constrained by a rigid framework. *Id.* at 1742. However, "the reference[s] must be viewed without the benefit of hindsight afforded to the disclosure." *In re Paulsen*, 30 F.3d 1475, 1482 (Fed. Cir. 1994).

The prior art cited in an obviousness determination should create a reasonable expectation, but not an absolute prediction, of success in producing the claimed invention. *In re O'Farrell*, 853 F.2d. 894, 903-04 (Fed. Cir. 1988). Both the suggestion and the expectation of success must be in the prior art, not in applicant's disclosure. *Amgen, Inc. v. Chugai Pharmaceutical Co., Ltd.*, 927 F.2d 1200, 1207 (Fed. Cir. 1991) (citing *In re Dow Chem. Co.*, 837 F.2d 469, 473 (Fed. Cir. 1988)). Further, the implicit and inherent teachings of a prior art reference may be considered under a Section 103 analysis. See *In re Napier*, 55 F.3d 610, 613 (Fed. Cir. 1995).

Secondary considerations such as commercial success, long-felt but unsolved needs, failure of others, and unexpected results, if present, can also be considered. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1538-39 (Fed. Cir. 1983). Although these factors can be considered, they do not control the obviousness conclusion. *Newell Cos. v. Kenney Mfg. Co.*, 864 F.2d 757, 768 (Fed. Cir. 1988).

To establish obviousness, the prior art references must be evaluated as a whole for what they fairly teach and neither the references' general nor specific teachings may

be ignored. *Application of Lundsford*, 357 F.2d. 385, 389-90 (CCPA 1966). A reference must be considered for all that it teaches, not just what purportedly points toward the invention but also that which teaches away from the invention. *Ashland Oil, Inc. v. Delta Resins & Refractories*, 776 F.2d. 281, 296 (Fed. Cir. 1985).

Independent claims 9, 11, 13 and 15 have been amended to recite that the fracture prediction formula is based on a shear force and a vertical force with respect to the spot welded portion. Independent claims 10, 12, 14 and 16 have been amended to recite that the fracture limit line is based on a shear force and a vertical force with respect to the spot welded portion. Support for the amendments can be found throughout the specification and figures of the application. (See, e.g., Fig. 5 and Substitute Specification, para. [0036]).

In the Office Action, the Examiner alleges that Chao teaches or suggests the recitations of independent claims 9-16, but acknowledges that Chao does not teach or suggest a fracture limit line. However, the Examiner contends that Jiang cures such deficiency of Chao to teach or suggest a fracture limit line. (See Office Action, p. 4, paragraphs 11 and 12).

Chao describes strength tests performed to reveal failure mechanisms of spot weld in lap-shear and cross tension test samples. Chao, as admitted by the Examiner, fails to teach or suggest a fracture limit line, as recited in previously pending claims 10, 12, 14 and 16, or a fracture prediction formula, as recited in amended independent claims 9, 11, 13 and 15. Jiang, however, does not cure such deficiency. Jiang describes a fracture limit line based on a circumferential strain and a local axial strain by linking the fracture points measured on a cylindrical surface of a specimen. (See Jiang,

p. 1519). Independent claims 9, 11, 13 and 15 have been amended to clearly recite that the fracture prediction formula is based on a shear force and a vertical force with respect to the spot welded portion, and independent claims 10, 12, 14 and 16 have been amended to clearly recite that the fracture limit line is based on a shear force and a vertical force with respect to the spot welded portion. Such recitations are certainly not taught or suggested by the alleged combination of Chao and Jiang. As stated above, Jiang, instead, describes a fracture line that is based on a circumferential and a local axial strain.

Thus, it is clear that the alleged combination of Chao and Jiang does not teach or suggest the recited subject matter of amended independent claims 9-16.

Therefore, for at least the reasons as presented herein above, Applicants respectfully request withdrawal of the 35 U.S.C. § 103(a) rejection of claims 9-16 as being allegedly unpatentable over Chao in view of Jiang.

VI. NEW CLAIMS 17-32

New claims 17-32 have been added. Support for the new claims can be found in the originally-filed specification and drawings. It is respectfully requested that a confirmation of patentability of these claims be provided in the next communication for this application to Applicants' representatives.

New claims 17-32 depend from one of amended independent claims 9-16, and are thus believed to be patentable at least for all the reasons as set forth above with regard to amended independent claims 9-16.

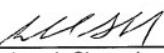
Further, new claims 17, 19, 21, 23, 25, 27, 29 and 31 recite that the shear force is provided in a direction along a member surface of an element that connects members with each other in which the spot welding is modeled, and the vertical force is provided in a direction connecting members with each other orthogonally to the shear force. New claims 18, 20, 22, 24, 26, 28, 30 and 32 recite that the shear force is determined one after another during a deformation of a collision analysis reproduced using the finite element procedure. Such subject matter is not taught or suggested by Chao and/or Jiang, taken alone or in combination.

VII. CONCLUSION

In light of the foregoing, Applicants respectfully submit that claims 9-32 are in condition for allowance. Prompt consideration, reconsideration and allowance of the present application are therefore earnestly solicited. If any issues remain outstanding, the Examiner is invited to contact the undersigned via the telephone number provided below.

Respectfully submitted,

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